

RX

Drug Name: Atropine Sulfate

Trade Name: Atropine

Class:

- Parasympatholytic
- Anticholinergic Agent

Mechanism of Action:

- Atropine is a competitive inhibitor of acetylcholine @ muscarinic receptor sites.
- The increase of sympathetic activity seen with atropine administration is due to the drug's parasympatholytic effects.
- In the setting of symptomatic bradycardias, atropine decreases vagal effects on the heart resulting in increased chronotropy & dromotropy (with little or no inotropic effects).
- It is used in cholinergic exposures as a direct antidote for the poison.

Indications:

- Symptomatic Bradycardias
- Pre-intubation in children < one month of age
- Poisoning with:

<i>Organophosphates</i>	<i>Nerve gas</i>
<i>Carbamates</i>	<i>Other cholinergic</i>
<i>Mushrooms</i>	<i>agents</i>

Contraindications:

- In the arrest setting, there are no contraindications

Non-arrest contraindications:

- Myasthenia gravis
- Closed-angle glaucoma
- Atrial fibrillation & flutter
- Known hypersensitivity
- Thyrotoxicosis
- Urinary tract obstruction

Precautions:

- Atropine may actually worsen 2nd degree Type II & 3rd degree AV blocks. *Many experts go as far as to indicate atropine is relatively contraindicated in this setting & transcutaneous pacing is preferred.*
- Cardiovascular disease including: CAD & CHF
- COPD
- HTN
- Renal/hepatic disease
- Geriatrics
- Pregnancy I
- Minimum Doses <0.5 mg in adults
 <0.1 mg in children

Smaller doses can cause a paradoxical bradycardia.

DRUG: ATROPINE SULFATE

RX

DRUG: ATROPINE SULFATE

Dosage:

Adults:

- Symptomatic Bradycardia: **IV**: 0.5 mg to 1 mg every 3-5 minutes.
Max dose: 0.04 mg/kg (full vagal blockade).
- Poisonings: **IV/IM/ET/IO**: 1-2 mg as needed to decrease cholinergic symptoms.

AUTOINJECTOR (MARK 1 KIT): 2 mg

Pediatrics:

- Symptomatic Bradycardias: **IV/IO**: 0.02 mg/kg repeated every 3-5 minutes as needed.

Child:	Minimum—0.1 mg	Maximum—0.5 mg
Adolescent:	Minimum—0.1 mg	Maximum—1 mg

ET: 2-3 times the IV dose diluted in 3-5 ml NS
- Poisonings: **IV/IM**: 0.05 mg/kg IV every 3-5 minutes as needed to decrease cholinergic symptoms.
- Pediatric Pre-Intubation: **IV/IO**: 0.02 mg/kg

Onset:

- Rapid

Duration:

- 2-6 hours

Side Effects:

- Anticholinergic Effects: Remember the mnemonic:
DRY AS A BONE—Dry mucous membranes, urinary retention, constipation
MAD AS A HATTER—Restlessness, tachycardia, palpitations, HA, dizziness
RED AS A BEET—Flushed, hot, & dry skin
BLIND AS A BAT—Pupillary dilation (mydriasis), blurred vision (cycloplegia), photophobia
- Tachydysrhythmias, Ventricular Tachycardia/Fibrillation
- Of course...N/V

Interactions:

- Anticholinergics increase vagal blockade.
- Potential adverse effects when administered with digitalis, cholinergics, neostigmine.
- Enhanced effects are possible with antihistamines, procainamide, quinidine, antipsychotics, antidepressants, benzodiazepines, phenothiazines.
- When administered too soon after NaHCO₃ (i.e. Without allowing sufficient fluid to flush the line), a precipitate will form.

RX

PEARLS:

- *To recognize cholinergic poisonings remember the SLUDGE, DUMBELS, and Days of the week mnemonics.*
- *Pushing a less than the minimum dose or pushing atropine too slowly may elicit a paradoxical bradycardia.*
- *Remember most bradycardias in pediatrics are a result of hypoxia/hypoxemia rather than a primary cardiac problem. Ventilation is always preferred over pharmacological intervention.*
- *Avoid being splashed in the eyes with atropine.*
- *Be prepared, on physician order, to deliver massive amounts (10-40mg) in the setting of cholinergic poisoning.*

Mnemonics for nerve agent/organophosphate/Carbamate exposure

<p>“S.L.U.D.G.E.”</p> <p>Salivation (excessive production of saliva)</p> <p>Lacrimation (excessive tearing)</p> <p>Urination (uncontrolled urine production)</p> <p>Defecation (uncontrolled bowel movement)</p> <p>Gastrointestinal distress (cramps)</p> <p>Emesis (excessive vomiting)</p>	<p>“D.U.M.B.E.L.S.” (Muscarinic)</p> <p>Diarrhea</p> <p>Urination</p> <p>Miosis</p> <p>Bradycardia/Bronchospasm/Bronchorrhea</p> <p>Emesis</p> <p>Lacrimation</p> <p>Salivation, Secretion, Sweating</p>
<p>“B.A.M.”</p> <p>Breathing Difficulty (wheezing)</p> <p>Arrhythmias (Bradycardia, ventr. Arrhythmias, AV Blocks.)</p> <p>Miosis (pinpoint pupils)</p>	<p>Days of the Week (Nicotenic)</p> <p>Mydriasis</p> <p>Tachycardia</p> <p>Weakness</p> <p>Hypertension, Hyperglycemia</p> <p>Fasciculations</p>
<p>“Three C’s” of CNS effects</p> <p>Confusion</p> <p>Convulsions</p> <p>Coma</p>	

DRUG: ATROPINE SULFATE

RX

DRUG: ATROPINE SULFATE

(This Page Left Blank)